## ABSTRACT

A non-contact sensing system for synchronous monitoring of the three-dimensional positions of multiple radiating sources in a crash test dummy comprises three linear sensors, each comprising a cylindrical lens and a linear array of photosensitive elements. Sources and corresponding images on the linear array are associated. The angular measurements from the three linear sensors are used for triangulation of the positions of the sources. In another embodiment, a tri-linear array of photosensitive elements with red, green and blue filters are used with sources radiating red, green and blue light to result in chromatic identification and six-degrees-of-freedom position measurement.